

CLAIMS

WHAT IS CLAIMED IS:

1. A machine for making bubbles comprising:

a housing;

a fan operatively coupled to said housing;

a bubble loop oriented in a substantially horizontal plane and subject to air blown in a substantially vertical direction from said fan, said bubble loop including a structural element in the form of a ring surrounding an open air passageway and a channel adapted to contain liquid bubble solution, said channel capable of delivering liquid bubble solution all the way around said bubble loop;

a liquid bubble solution supply supplying said bubble loop with bubble solution; and

a membrane-forming member forming liquid bubble solution membrane across said air passageway of said bubble loop.

2. The machine for making bubbles of Claim 1 wherein:

said liquid bubble solution supply including an inverted bottle type fluid delivery system adapted to maintain a fluid level such that liquid bubble solution is supplied to but does not overflow said channel in said bubble loop during normal use.

3. The machine for making bubbles of Claim 2 wherein:

2 said inverted bottle type fluid delivery system comprises a removable bottle
adapted to contain liquid bubble solution.

4. The machine for making bubbles of Claim 3 wherein:

2 said inverted bottle type fluid delivery system further comprises a cap and
valve assembly attached to said bottle and a projection connected to said housing
4 configured such that while said bottle is separated from the rest of said machine for
making bubbles, said cap and valve assembly seals said bottle and while said bottle
6 is properly installed, said projection causes said valve to open thereby allowing
liquid bubble solution to exit said bottle and air to enter.

5. The machine for making bubbles of Claim 3 further comprising:

2 a float-activated on/off switch including a float, said float-activated on/off
switch configured in such a way that while said bottle is properly installed and said
4 bottle contains more than a minimum amount of liquid bubble solution said float
floats on liquid bubble solution supplied by said bottle and causes said on/off
6 switch to be in the "on" state.

6. The machine for making bubbles of Claim 5 wherein:

2 said float-activated on/off switch comprises a permanent magnet and a
magnetic reed switch.

7. The machine for making bubbles of Claim 5 further comprising:

2 a tilt switch, said tilt switch preventing said fan from operating while said machine for making bubbles is not in a substantially upright orientation.

8. The machine for making bubbles of Claim 6 wherein:

2 said machine for making bubbles may be disassembled into a first part including said permanent magnet and a second part including said magnetic reed
4 switch.

9. The machine for making bubbles of Claim 8 further comprising:

2 an assembly switch, said assembly switch preventing said fan from operating while said machine for making bubbles is in a disassembled state.

10. The machine for making bubbles of Claim 1 wherein:

2 said membrane-forming member is powered by air pressure from said fan.

11. The machine for making bubbles of Claim 10 further comprising:

2 a controller, said controller having a first state in which power is not supplied to said fan and a second state in which power is supplied to said fan, said
4 controller being capable of operating in a cyclic manner alternating between said first state and said second state.

12. The machine for making bubbles of Claim 11 wherein:

2 an initial first state after said machine for making bubbles is turned on is

sufficient in duration to allow said liquid bubble solution supply to supply liquid
bubble solution to said bubble loop; and

 durations of said second states and said first states subsequent to said initial
first state are sufficient to allow said membrane-forming member to form a
membrane across said air passageway .

13. The machine for making bubbles of Claim 1 wherein:

 said membrane-forming member includes a pull-away member configured
to contact liquid bubble solution within said channel so that as said pull-away
member is pulled away from said channel, a tubular film of liquid bubble solution
is drawn from said channel which, upon reaching a certain length, naturally
pinches off to form a closed membrane across said air passageway of said bubble
loop.

14. The machine for making bubbles of Claim 13, wherein said membrane-forming
member further comprises:

 a hinged flap coupled to said pull-away member, said hinged flap subject to
air blown from said fan, said hinged flap being biased toward a first closed position
while said fan is off and biased toward a second open position while said fan is on;
whereby

 said pull-away member may contact liquid bubble solution in said channel
while said hinged flap is in said first closed position.

15. A bubble solution supply system for a machine that makes bubbles, the machine
having a housing and a channel supplying a bubble loop with bubble solution, the bubble
solution supply system comprising:

an inverted bottle type fluid delivery system adapted to maintain a fluid
level such that liquid bubble solution does not overflow the channel during normal
use.

16. The bubble solution supply system of Claim 15 wherein:

said inverted bottle type fluid delivery system comprises a removable bottle
adapted to contain liquid bubble solution.

17. The bubble solution supply system of Claim 16 wherein:

said inverted bottle type fluid delivery system further comprises a cap and
valve assembly attached to said bottle and a projection coupled to the housing
configured in such a way that when said bottle is separated from the rest of said
machine for making bubbles, said cap and valve assembly seals said bottle and
when said bottle is properly installed, said projection causes said valve to open
thereby allowing liquid bubble solution to exit said bottle and air to enter.

18. The bubble solution supply system of Claim 16 further comprising:

a float-activated on/off switch configured in such a way that while said
bottle is properly installed and said bottle contains more than a minimum amount of
liquid bubble solution, said float causes said on/off switch to be in an "on" state.

19. The bubble solution supply system of Claim 18 wherein:

said on/off switch comprises a permanent magnet and a magnetic reed switch.

20. A membrane-forming member for forming liquid bubble solution membranes across an air passageway of a bubble loop, wherein said membrane-forming member is powered by air pressure from a fan blowing air through said air passageway.

21. The membrane-forming member of Claim 20, further comprising:

a controller operatively coupled to the membrane-forming member, said controller having a first state in which power is not supplied to said fan and a second state in which power is supplied to said fan, said controller being capable of operating in a cyclic manner alternating between said first state and said second state.

22. The membrane-forming member of Claim 21 wherein:

an initial first state of said controller is sufficient in duration to allow liquid bubble solution from a supply of liquid bubble solution to flow to the bubble loop to supply initial liquid bubble solution to the bubble loop; and

a duration of said second states and said first states subsequent to said initial first state are sufficient to allow the membrane-forming member to form a membrane across the air passageway.

23. A membrane-forming member for forming liquid bubble solution membranes
across an air passageway of a bubble loop having a channel holding liquid bubble solution,
comprising:

a pull-away member configured to contact liquid bubble solution within the
channel such that as said pull-away member is pulled away from the channel, a
tubular film of liquid bubble solution is drawn from the channel which, upon
reaching a certain length, naturally pinches off to form a closed membrane across
the air passageway of the bubble loop.

24. The membrane-forming member of Claim 23, further comprising:

a hinged flap coupled to said pull-away member, said hinged flap
susceptible to air blown from a fan, said hinged flap being biased toward a first
closed position while said fan is off and biased toward a second open position while
said fan is on; whereby

said pull-away member is mounted on said hinged flap in such a way that
said pull-away member may contact liquid bubble solution in the channel while said
hinged flap is in said first closed position.

25. A bubble-making machine for making bubbles vertically dispensed, comprising:

a housing;

a fan operatively coupled to said housing for blowing air in an upward
direction;

a first bubble ring operatively positioned within said housing and being

6 superpositioned to said fan and subject to air blown by said fan;

8 a bubble solution supply coupled to said first bubble ring to supply said
first bubble ring with bubble solution; and

10 a membrane-forming ring intermittently engaging said first bubble ring
and said bubble solution to aid in formation of bubbles; whereby

12 bubbles may be formed in an ongoing manner by air traveling through
said first bubble ring.

26. A bubble-making machine for making bubbles vertically dispensed as set forth
in Claim 25, further comprising:

4 said membrane-forming ring withdrawing from said first bubble ring
when said fan blows air.

27. A machine for making bubbles as set forth in Claim 25, further comprising:

2 a first hinged flap incorporating said membrane-forming ring, said first
hinged flap hingedly attached to said housing and pivotably retreating from said
4 first bubble ring and withdrawing said membrane-forming ring from said first
bubble ring when said fan blows air through said first bubble ring.

28. A machine for making bubbles as set forth in Claim 27, further comprising:

2 said hinged flap pivotably opening to a predetermined angle when
subjected to air blown by said fan, said predetermined angle aiding in carriage
4 of bubbles from said first bubble ring.

29. A machine for making bubbles as set forth in Claim 25, further comprising:

a controller, said controller coupled to and intermittently activating said fan to control activity of said fan; whereby

said membrane-forming ring intermittently engages said first bubble ring to ensure formation of a membrane from which bubbles may be continually formed.

30. A machine for making bubbles as set forth in Claim 29, said controller further comprising:

a tip-over switch, said tip-over switch coupled to said fan and turning said fan off when the machine for making bubbles strays from an approximately upright position.

31. A machine for making bubbles as set forth in Claim 29, said controller further comprising:

an intermittent activation system coupled to and intermittently activating said fan, said intermittent activation system intermittently ceasing operation of said fan until said membrane-forming ring engages said first bubble ring to ensure continual formation of bubbles.

32. A machine for making bubbles as set forth in Claim 25, said bubble solution supply further comprising:

a reservoir for holding bubble solution, said reservoir coupled to said

first bubble ring and providing a path for said bubble solution to said first bubble ring.

33. A machine for making bubbles as set forth in Claim 32, said bubble solution supply further comprising:

a float cage present in said reservoir; and

a float restrained by said float cage and coupled to said fan, said float activating said fan when floating in said reservoir.

34. A machine for making bubbles as set forth in Claim 33, said bubble solution supply further comprising:

a bottle, said bottle for holding bubble solution; and

a spring-biased lid threadably attachable to said bottle, said spring-biased lid having a movable stopper panel for allowing egress of bubble solution to said reservoir, said movable stopper panel urged to a closed state by a spring and opened by said float cage when said bottle with said lid is turned upside-down and placed into position about said float cage and above said reservoir; whereby

bubble solution may be continuously fed into said reservoir by said bottle without overflow or spillage until a volume of bubble solution held by said bottle is depleted and said float is floatably lifted by said bubble solution to activate said fan.

35. A machine for making bubbles as set forth in Claim 33, said float further

comprising:

a magnetic float.

36. A machine for making bubbles as set forth in Claim 25, further comprising:

said housing directing air blown by said fan to said first bubble ring and preventing dispersion of said fan-blown air away from said first bubble ring.

37. A machine for making bubbles as set forth in Claim 36, further comprising:

a housing switch coupling said housing to said fan, said housing switch preventing operation of said fan unless said housing is properly in place.

38. A machine for making bubbles as set forth in Claim 37, further comprising:

said housing coupled to said fan by a bayonet connection.

39. A bubble-making machine for making bubbles vertically dispensed, comprising:

a fan for blowing air in an upward direction;

a housing operatively coupled to said fan, said housing directing air blown by said fan and preventing dispersion of said fan-blown air;

a first bubble ring operatively positioned within said housing and being superpositioned to said fan and subject to air blown by said fan;

a bubble solution supply coupled to said first bubble ring to supply said first bubble ring with bubble solution, said bubble solution supply including:

a reservoir for holding bubble solution, said reservoir coupled to

said first bubble ring and providing a path for said bubble solution to
said first bubble ring;

a float cage present in said reservoir;

a magnetic float restrained by said float cage and coupled to said
fan, said magnetic float activating said fan when floating in said
reservoir;

a container, said container for holding bubble solution; and

a spring-biased lid threadably attachable to said container, said
spring-biased lid having a movable stopper panel for allowing egress of
bubble solution to said reservoir, said movable stopper panel urged to a
closed state by a spring and opened by said float cage when said
container with said lid is turned upside-down and placed into position
about said float cage and above said reservoir; whereby

bubble solution may be limitedly but continuously fed into said
reservoir by said container without overflow or spillage until a volume of
bubble solution held by said container is depleted, said magnetic float
floatably lifted by said bubble solution to activate said fan;

a membrane-forming ring, said membrane-forming ring initially
engaging said first bubble ring and said bubble solution, said membrane-forming
ring withdrawing from said first bubble ring when said fan blows air to aid in
formation of bubbles;

a first hinged flap incorporating said membrane-forming ring, said first
hinged flap hingedly attached to said housing and pivotably retreating from said

first bubble ring and withdrawing said membrane-forming ring from said first
bubble ring when said fan blows air through said first bubble ring, said hinged
flap pivotably opening to a predetermined angle when subjected to air blown by
said fan, said predetermined angle aiding in carriage of bubbles from said first
bubble ring;

a controller, said controller coupled to said housing and said reservoir,
said controller intermittently activating said fan to control activity of said fan so
that said membrane-forming ring intermittently engages said first bubble ring to
ensure formation of a membrane from which bubbles may be continually
formed, said controller comprising:

a tip-over switch, said tip-over switch coupled to said fan and
turning said fan off when the machine for making bubbles strays from an
approximately upright position;

an intermittent activation system coupled to and intermittently
activating said fan, said intermittent activation system intermittently
ceasing operation of said fan until said membrane-forming ring engages
said first bubble ring to ensure continual formation of bubbles;

a magnetic housing switch coupling said housing to said fan, said
magnetic housing switch preventing operation of said fan unless said
housing is properly in place; and

a magnetic float switch coupled to said magnetic float and
coupled to said fan, said magnetic float switch turning said fan off when
said magnetic float is not floating; whereby

56 said tip-over switch, said magnetic airflow channel switch, and
said magnetic float switch must all be on for said fan to activate and for
58 bubbles to be formed; whereby
bubbles may be formed in an ongoing manner by air traveling through
60 said first bubble ring upon provision of bubble solution to said reservoir.

40. A machine for making bubbles, comprising:

2 a fan, said fan blowing air in an upward direction;
a first bubble ring subject to air blown by said fan; and
4 a retracting lip, said retracting lip engaging said first bubble ring, said
retracting lip withdrawing from said first bubble ring to aid in formation of
6 bubbles, said retracting lip withdrawing from said first bubble ring when said
first bubble ring is subjected to air blown by said fan; whereby
8 upon provision of bubble solution to said first bubble ring, bubbles may
be formed in an ongoing manner by air traveling through said first bubble ring.

41. A machine for making bubbles as set forth in Claim 40, further comprising:

2 a first hinged flap incorporating said retracting lip, said first hinged flap
retreating from said first bubble ring and withdrawing said retracting lip from
4 said first bubble ring when said fan blows air through said first bubble ring.

42. A machine for making bubbles as set forth in Claim 41, said first hinged flap
2 further comprising:

said hinged flap opening to a predetermined angle when subjected to air
blown by said fan, said predetermined angle aiding in carriage of bubbles from
said first bubble ring.

43. A machine for making bubbles as set forth in Claim 40, further comprising:

said retracting lip being a membrane-forming ring.

44. A machine for making bubbles as set forth in Claim 40, further comprising:

a controller, said controller coupled to and intermittently activating said
fan; whereby

said retracting lip intermittently engages said first bubble ring to ensure
formation of a membrane from which bubbles may be formed.

45. A machine for making bubbles as set forth in Claim 44, said controller further
comprising:

a tip-over switch, said tip-over switch coupled to said fan and turning
said fan off when the machine for making bubbles strays from an approximately
upright position.

46. A machine for making bubbles as set forth in Claim 44, said controller further
comprising:

an intermittent activation system coupled to and intermittently activating
said fan, said intermittent activation system intermittently ceasing operation of

said fan until said retracting lip engages said first bubble ring to ensure
continual formation of bubbles.

47. A machine for making bubbles as set forth in Claim 40, further comprising:

a reservoir, said reservoir coupled to said first bubble ring and providing
a path for said bubble solution to said first bubble ring.

48. A machine for making bubbles as set forth in Claim 47, further comprising:

a float cage present in said reservoir; and

a float restrained by said float cage and coupled to said fan, said float
activating said fan when floating in said reservoir.

49. A machine for making bubbles as set forth in Claim 48, said float further
comprising:

a magnetic float.

50. A machine for making bubbles as set forth in Claim 40, further comprising:

an airflow channel directing air blown by said fan to said first bubble
ring and preventing dispersion of said fan-blown air away from said first bubble
ring.

51. A machine for making bubbles as set forth in Claim 50, further comprising:

an airflow channel switch coupling said airflow channel to said fan, said

airflow channel switch preventing operation of said fan unless said airflow
channel is properly in place.

52. A machine for making bubbles, comprising:

a fan, said fan for blowing air upwardly;

first and second bubble rings subject to air blown by said fan;

an airflow channel directing air blown by said fan to said first and
second bubble rings and preventing dispersion of said fan-blown air away from
said first and second bubble rings, said airflow channel having an airflow
channel magnet that enables activation of said fan when said airflow channel is
properly in place;

first and second membrane-forming rings, said first membrane-forming
ring engaging said first bubble ring and said second membrane-forming ring
engaging said second bubble ring, said first and second membrane-forming rings
respectively withdrawing from said first and second bubble rings to aid in
formation of bubbles, said first and second membrane-forming ring respectively
withdrawing from said first and second bubble rings when said first and second
bubble rings are subject to air blown by said fan;

first and second hinged flaps coupled by first and second hinges to said
airflow channel on opposite sides thereof, said first and second hinged flaps
respectively incorporating said first and second membrane-forming rings, said
first and second hinged flaps pivotably retreating from said first and second
bubble rings and respectively removing said first and second membrane-forming

rings from said first and second bubble rings when said fan blows air upon said
first and second bubble rings, said first and second hinged flaps opening to a
predetermined angle when subject to air blown by said fan, said predetermined
angle aiding in carriage of bubbles away from said first and second bubble
rings;

a controller, said controller coupled to and intermittently activating said
fan so that said first and second membrane-forming rings intermittently engage
said first and second bubble rings, respectively, to ensure formation of
membranes from which bubbles may be formed, said controller including:

a tip-over switch, said tip-over switch coupled to said fan and
turning said fan off when the machine for making bubbles strays from an
approximately upright position;

an intermittent activation system coupled to and intermittently
activating said fan, said intermittent activation system intermittently
ceasing operation of said fan until said first and second membrane-
forming rings respectively engage said first and second bubble rings;

a magnetic airflow channel switch coupled to said fan and turning
said fan off when said airflow channel switch is off; and

a magnetic float switch coupled to said fan and turning said fan
off when said magnetic float switch is off; whereby

said tip-over switch, said magnetic airflow channel switch, and
said magnetic float switch must all be on for said fan to activate;

a reservoir, said reservoir coupled to said first and second bubble rings

44 by respective first and second paths for enabling respective bubble solution flow
to said first and second bubble rings, said reservoir having a float cage; and

46 a magnetic float restrained by said float cage and coupled to said fan,
said float activating said fan by turning on said magnetic float switch when
48 floating in said reservoir; whereby

upon provision of bubble solution to said reservoir, bubbles may be
50 formed in an ongoing manner by air traveling through said first and second
bubble rings.

53. A machine for making bubbles as set forth in Claim 52, further comprising:

2 a bottle, said bottle for holding bubble solution; and

a spring-biased lid threadably attachable to said bottle, said spring-biased
4 lid having a movable stopper panel for allowing egress of bubble solution to said
reservoir, said movable stopper panel urged to a closed state by a spring and
6 opened by said float cage when said bottle with said lid is turned upside-down
and placed into position about said float cage and above said reservoir; whereby

8 bubble solution may be continuously fed into said reservoir by said bottle
without overflow or spillage until a volume of bubble solution held by said
10 bottle is depleted and said float is floatably lifted by said bubble solution to
activate said fan.